

REMARKS

Status of Claims:

Claims 1-3, 6-13, and 15 are pending herein. Claims 4, 5 and 14 have been canceled, and the limitations of dependent Claim 4 have been incorporated into each of independent Claims 1 and 9.

Objection to the Drawing under 37 CFR 1.83(a)

The drawings were objected to in paragraph 1 of the Action under 37 CFR 1.83(a), on the grounds that “the U-groove and the V-groove as recited in claims 5 and 6 must be shown or the feature(s) canceled from the claims” and “the limitation of said top finger contains conductive material that flowed into the groove upon attaching said top finger to said die as recited in claim 4 must also be shown or the feature canceled from the claims”.

In view of the accompanying corrected drawing of Figure 2, the objections to the drawings are believed to be overcome and reconsideration as to this objection is respectfully requested. Specifically, the corrected drawing of Figure 2 illustrates conductive material in the groove. The cancellation of Claim 5 is believed to render the “V-groove” objection moot.

Rejection of Claims 1-3, 5, 9-10, 12-14 under 35 U.S.C. 102(b)

Claims 1-3, 5, 9-10, 12-14 were rejected under 35 U.S.C. 102(b) as being anticipated by Williams et al. (U.S. Patent No. 6,307,755, hereinafter “Williams”).

This rejection is respectfully traversed. Independent Claims 1 and 9 have each been amended to incorporate the limitations of now canceled dependent Claim 4. Thus, the rejections of Claims 1 and 9 under 102(b) are respectfully traversed.

Rejection of Claims 4, 6, 7, 8, 11 and 15 under 35 U.S.C. 103(a)

Claim 4, 6, and 11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Williams. Claims 7, 8 and 15 were rejected as being unpatentable over Williams in view of admitted prior art.

Independent Claims 1 and 9, each of which incorporate the limitations of Claim 4 as amended herein, are directed to a semiconductor device which includes a bottom lead frame, a die attached on the bottom lead frame, and a top finger attached to the die. The top finger has a groove which is provided at a bottom surface of the top finger and is adjacent to a contact position between the top finger, the die and the groove. The groove in the top finger contains conductive material that flowed into the groove upon attaching the top finger to the die.

Applicant respectfully submits that Williams fails to teach or suggest the device recited in amended independent Claim 1 and 9.

The embodiment of figures 28A-E of Williams (noted in the Action at paragraph 5 as ‘where the groove is shown with a solder material’) is directed to use of a notch as a moat. In Williams, leads 630A and 630B, which are part of leadframes, are positioned side by side in a same planar over a die 636, as shown in figures 28A-E. Epoxy layers 638 and 640 are inserted between the die 636 and leads 630A and 630B. Moats 632 and 634 (which the Examiner refers to as an analogous to grooves of Applicant’s invention), are formed in the bottom surfaces of leads 630A and 630B.

On the other hand, in a device according to Applicant’s invention as defined in amended independent Claim 1, the die is attached on the bottom lead frame and top finger is attached on the die, as shown in Figure 2. The *structure* of the leadframes and die is different from that of Williams. Because of this difference in structure, the function of Applicant’s recited ‘groove’ is different from that of Williams’ moat. In Applicant’s device, “the groove is provided at a bottom side of the top finger (21) so as to prevent the solder (24) from overflowing onto a chip passivation ring (23)”, as shown in figure 2 (see paragraph 10 of Applicant’s specification). To the contrary, the moats 632 and 634 act to prevent “a short between leads 630A and 630B” which result from “spreading outward of the epoxy layers 638 and 640” (see column 21, line 59- column 22, line 8 of Williams). In other words, Williams’ moats prevent epoxy layers from spreading outward, while the grooves of a device in accordance with Applicant’s invention hinder the conductive material from spreading downward.

For at least the foregoing reason, it is respectfully submitted that each of independent Claim 1 and 9, as amended herein, is patentable over Williams.

Claims 2-3, 6-8, and 10-13 and 15 are dependent on, and contain all the limitations of, one or the other of independent Claim 1 and 9, and as such are submitted to be patentable for at least the same reasons as Claims 1 and 9.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the outstanding claim rejections under 35 U.S.C. §103(a).


CONCLUSION

Applicants respectfully submit that Claims 1-3, 6-13, and 15 are presently in condition for allowance, early notification of which is earnestly solicited. Should the Examiner be of the view that an interview would expedite consideration of this Amendment or of the application at large, request is made that the Examiner telephone the Applicant's attorney at (908) 518-7700 in order that any outstanding issues be resolved.

FEES

The Office is authorized to charge any fees required to deposit account number 50-1047.

Respectfully submitted,


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